Docket No.: 110267-111 US1 PATENT/OFFICIAL

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

#15


In re Application of :

David W. Stebbings :

Serial No. 09/315,102 : Group Art Unit: 2131

Filed: 20 May 1999 : Examiner: Aravind K. Moorthy

For: MODULATION METHOD FOR MINIMIZING PIRATING AND/OR UNAUTHORIZED COPYING AND/OR UNAUTHORIZED ACCESS OF/TO DATA ON/FROM DATA MEDIA INCLUDING COMPACT DISCS AND DIGITAL VERSATILE DISCS

**TRANSMITTAL OF FORMAL DRAWINGS**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

At the time the above application was filed, informal drawings were presented with the application. Formal drawings for Figures 1-26 are submitted herewith.

Respectfully submitted,

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| | |
|---|---|
| DISC | |
| PLAYING TIME: | 74 MINUTES, 33 SECONDS MAXIMUM |
| ROTATION: | COUNTER-CLOCKWISE WHEN VIEWED FROM READOUT SURFACE |
| ROTATIONAL SPEED: | 1.2-1.4 m/sec. |
| TRACK PITCH: | 1.6 μm |
| DIAMETER: | 120 mm |
| THICKNESS: | 1.2 mm |
| CENTER HOLE DIAMETER: | 15 mm |
| RECORDING AREA: | 46 mm-117 mm |
| SIGNAL AREA: | 50mm-116 mm |
| MATERIAL: | ANY TRANSPARENT MATERIAL WITH 1.55 REFRACTION INDEX, SUCH AS POLYCARBONATE |
| MINIMUM PIT LENGTH: | 0.833 μm (1.2 m/sec.) to 0.972 mm (1.4 m/sec.) |
| MAXIMUM PIT LENGTH: | 3.05 μm (1.2 m/sec.) to 3.56 mm (1.4 m/sec.) |
| PIT DEPTH: | APPROX. 0.11 μm |
| PIT WIDTH: | APPROX. 0.5 μm |
| OPTICAL SYSTEM | |
| STANDARD WAVELENGTH: | $\lambda$ = 780 nm (7.800A) |
| FOCAL DEPTH: | ± 2 μm |
| ($\lambda$/NA ≤ 1.75 μm, NA: NUMERICAL APERATURE) | |
| SIGNAL FORMAT | |
| NUMBER OF CHANNELS: | 2 CHANNELS (4-CHANNEL RECORDING POSSIBLE) |
| QUANTIZATION: | 16-BIT LINEAR QUANTIZATION |
| QUANTIZING TIMING: | CONCURRENT FOR ALL CHANNELS |
| SAMPLING FREQUENCY: | 44.1 kHz |
| CHANNEL BIT RATE: | 4.3218 Mb/sec. |
| DATA BIT RATE: | 2.0338 Mb/sec. |
| DATA-TO-CHANNEL BIT RATIO: | 8:17 |
| ERROR CORRECTION CODE: | CIRC (WITH 25% REDUNDANCY) |
| MODULATION SYSTEM: | EFM |

FIG. 1
PRIOR ART

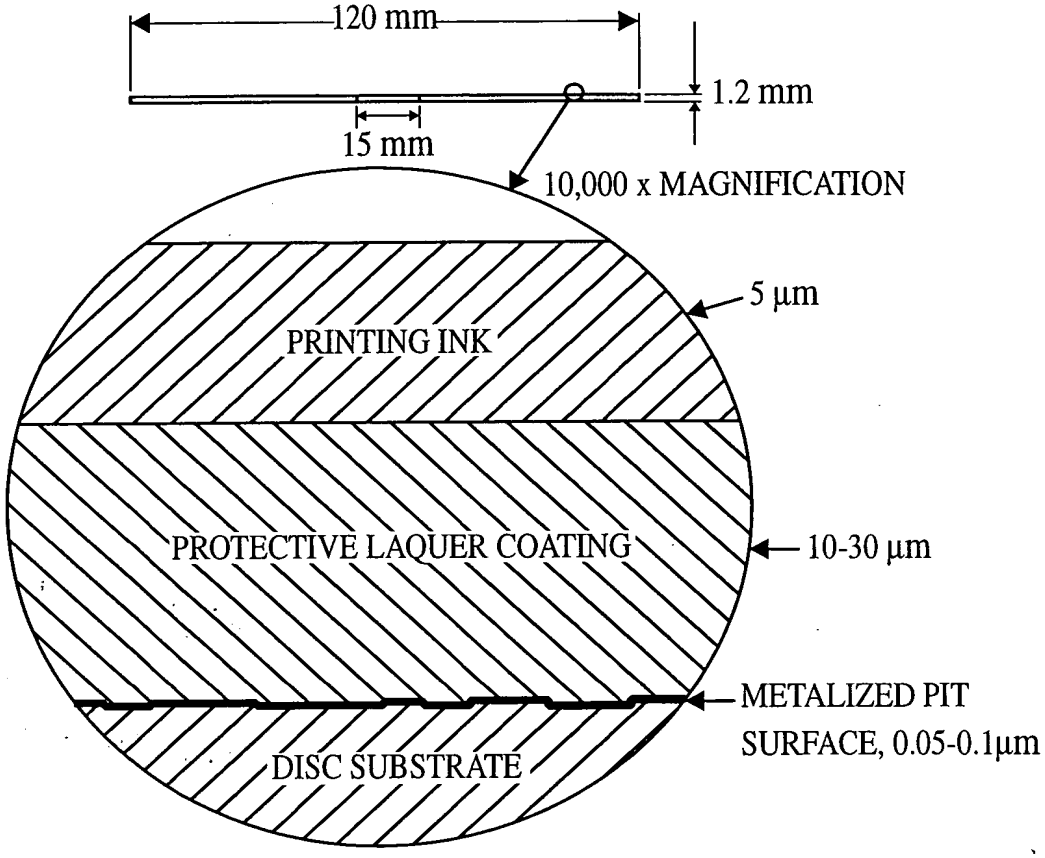


FIG. 2
PRIOR ART

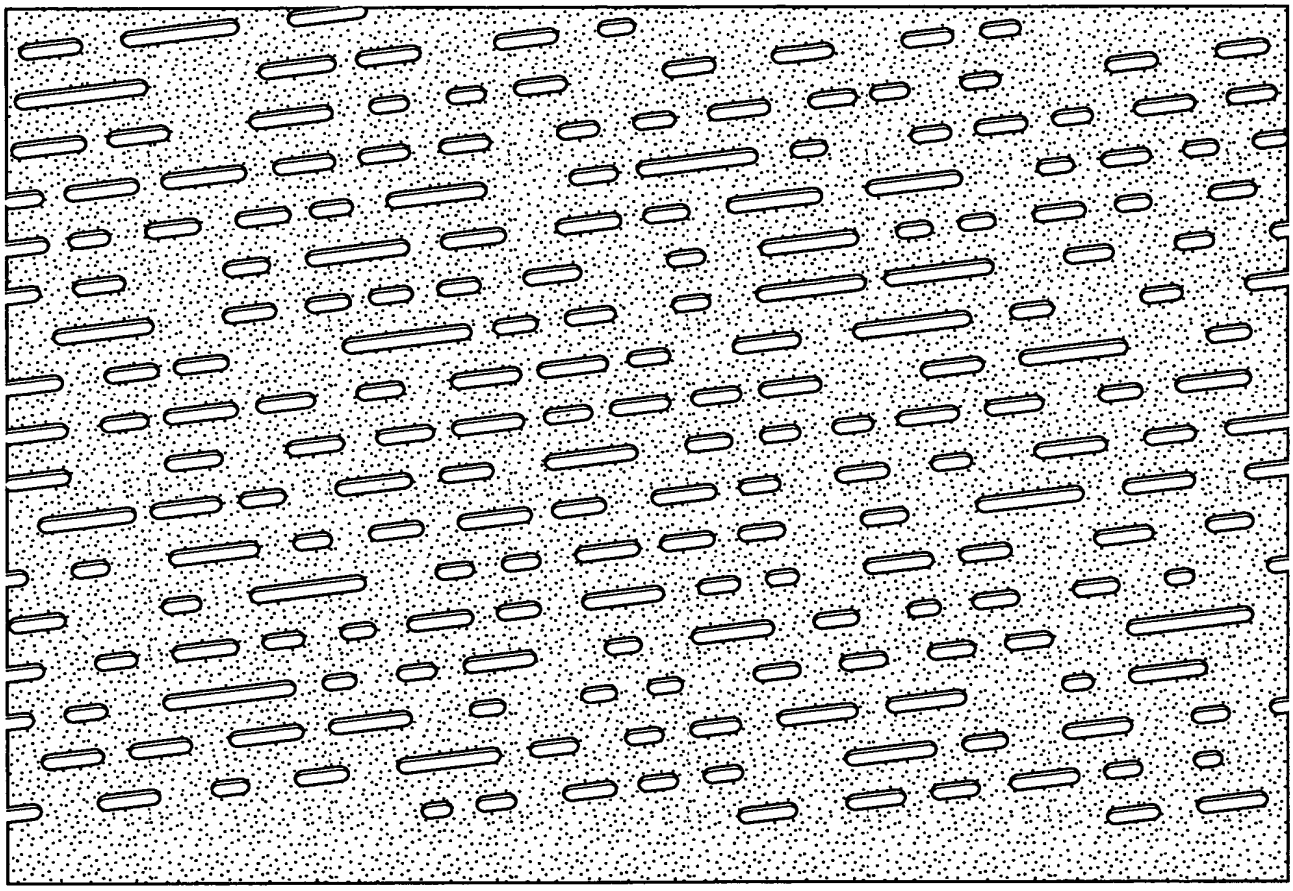

FIG. 3
PRIOR ART

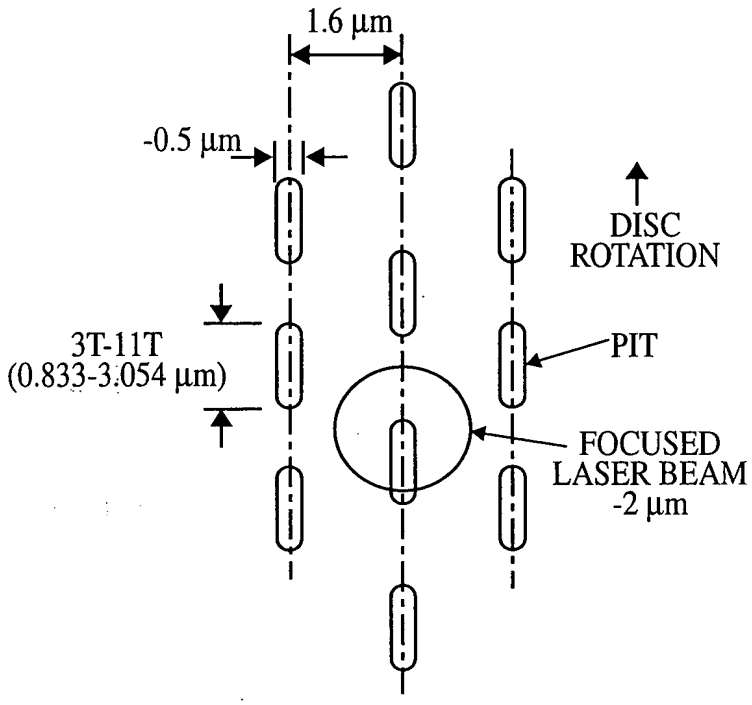


FIG. 4
PRIOR ART

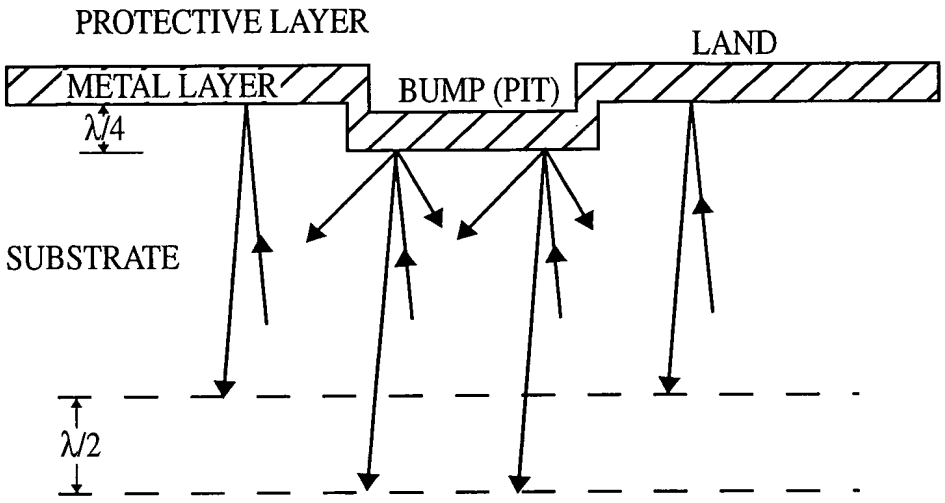


FIG. 5
PRIOR ART

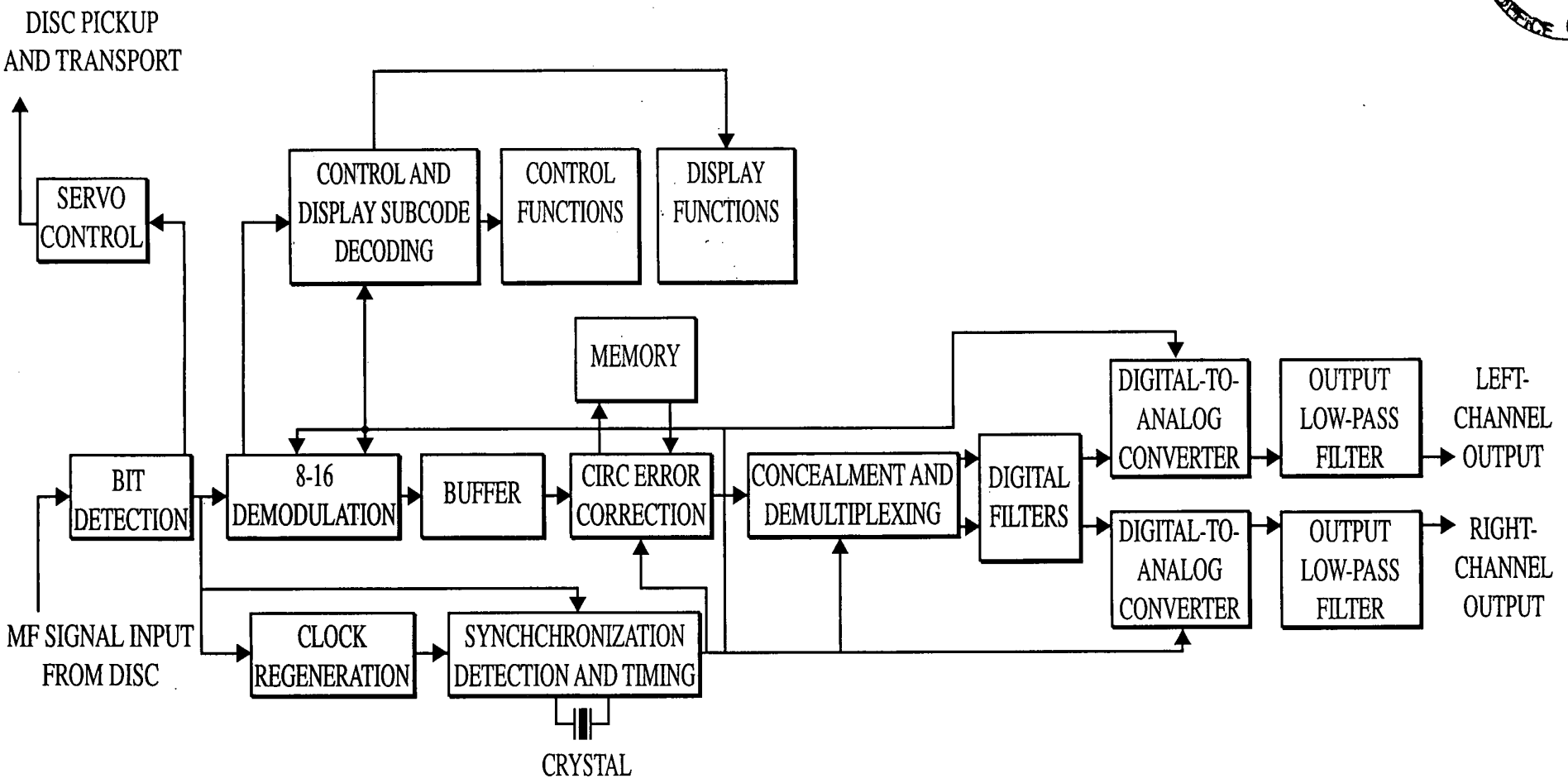


FIG. 6
PRIOR ART

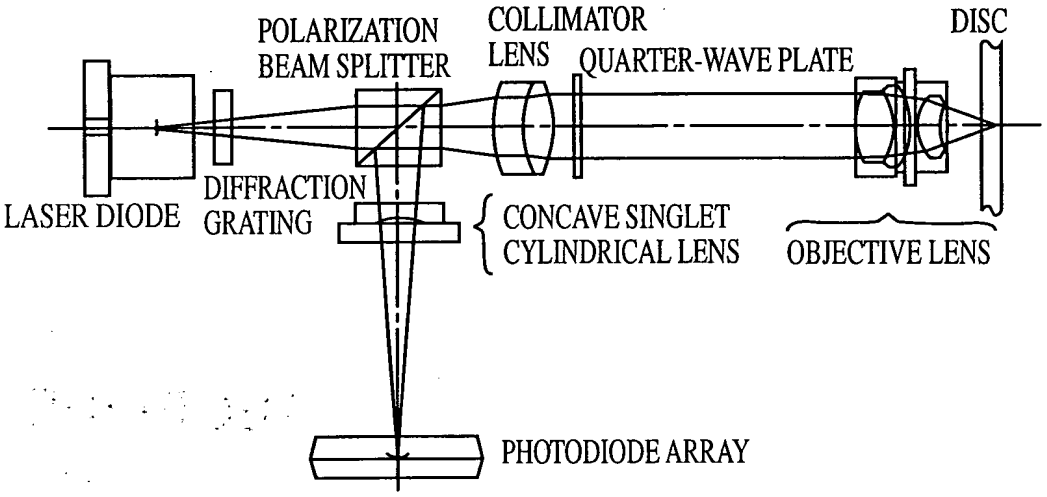


FIG. 7
PRIOR ART

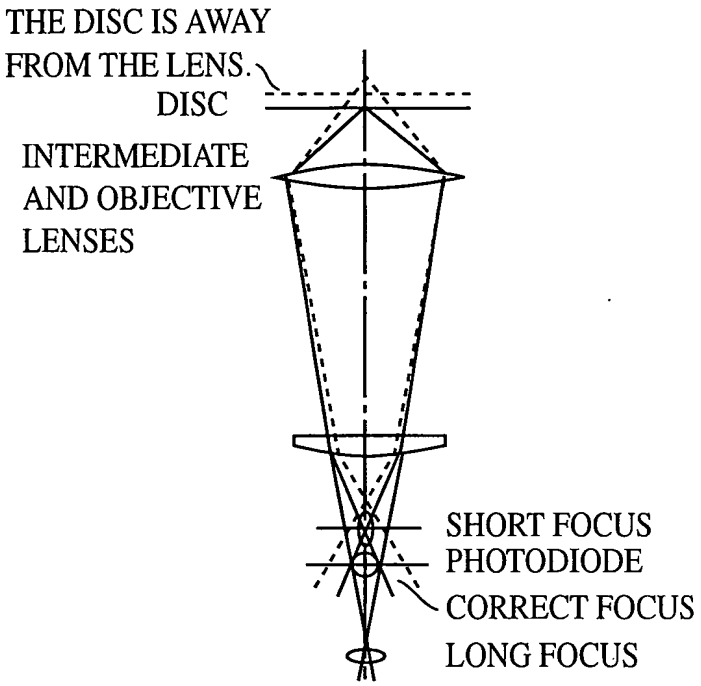


FIG. 8
PRIOR ART

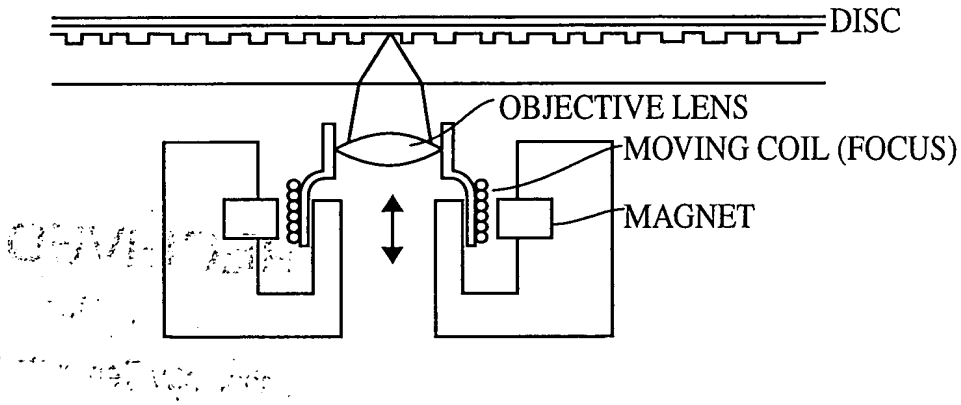


FIG. 9
PRIOR ART

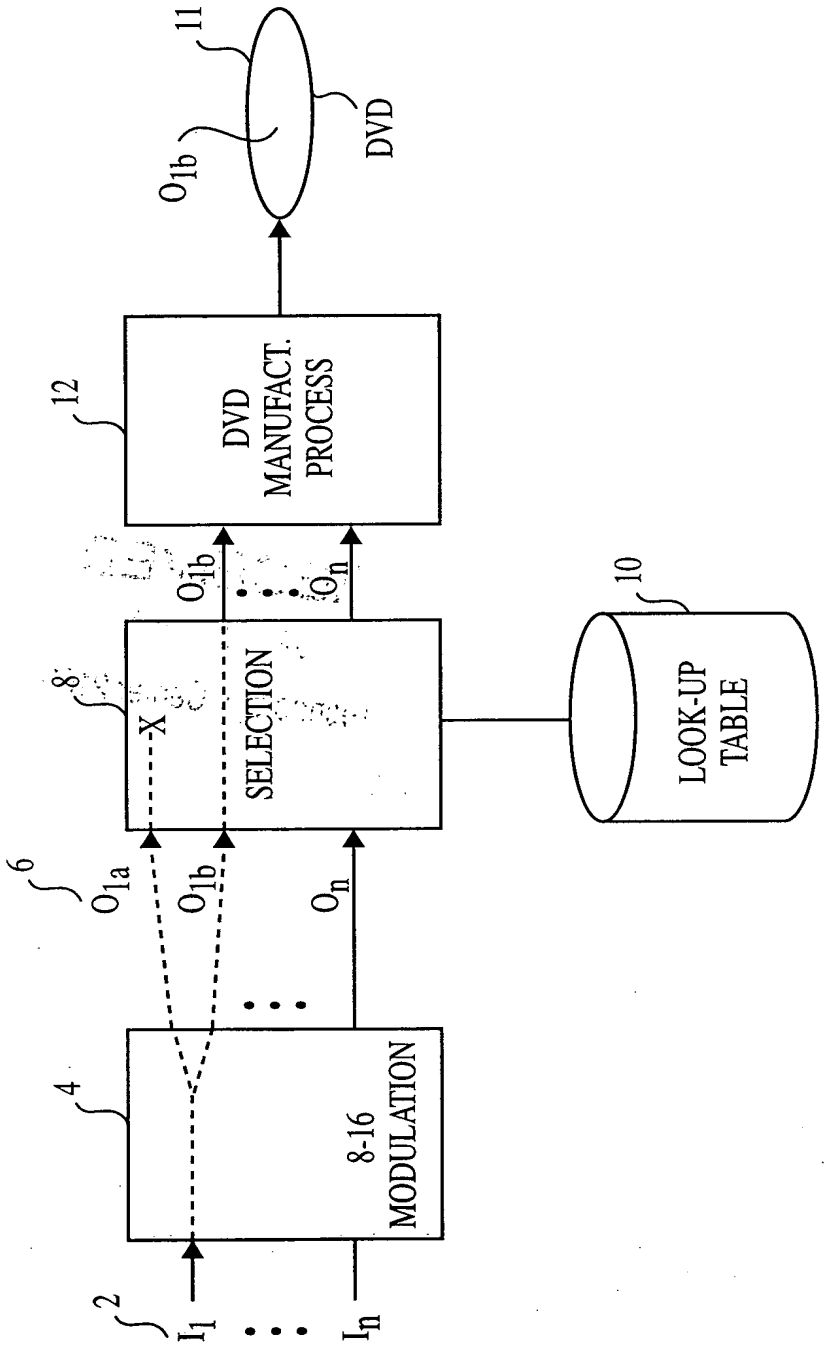


FIG. 10

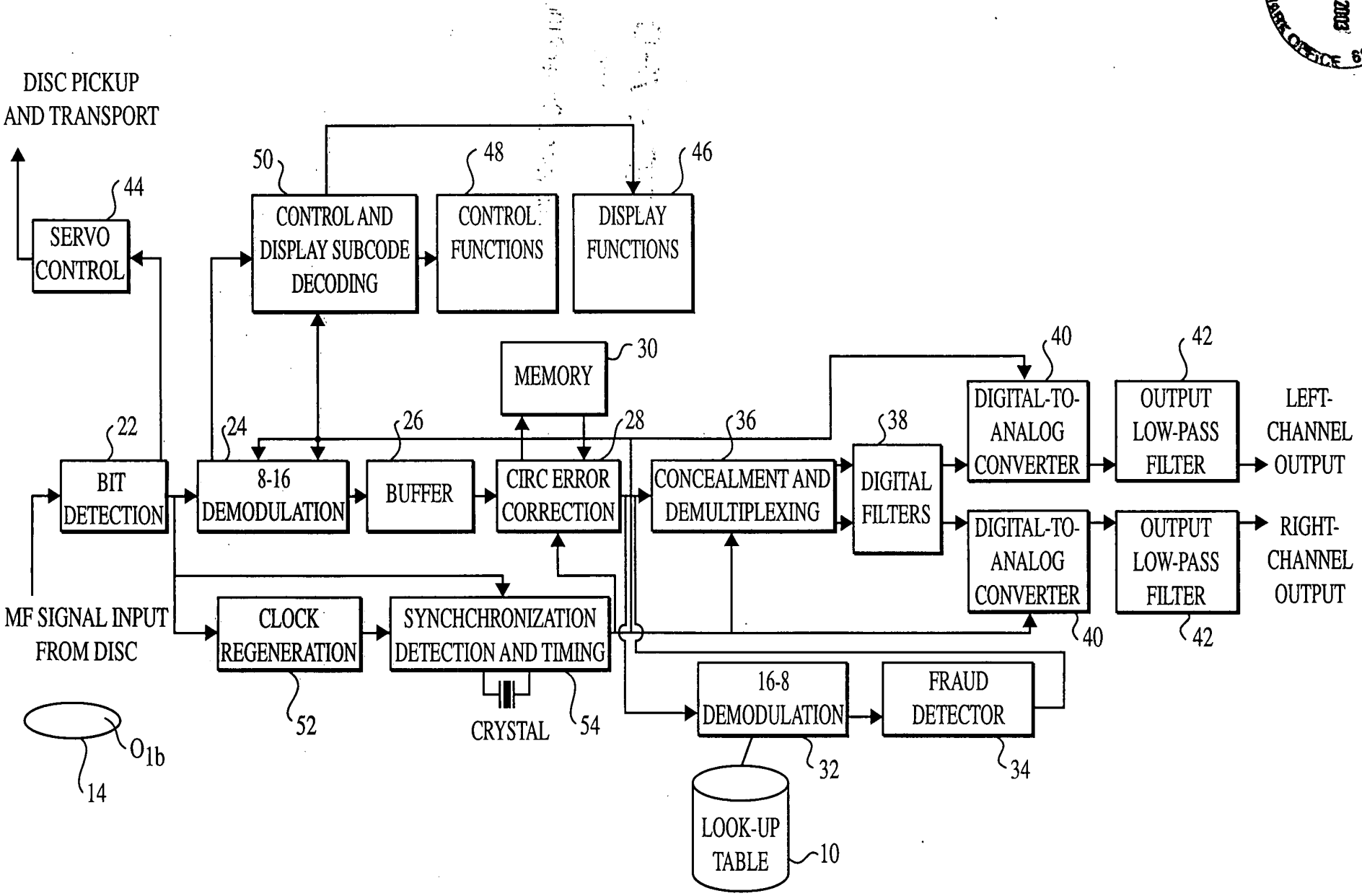


FIG. 11

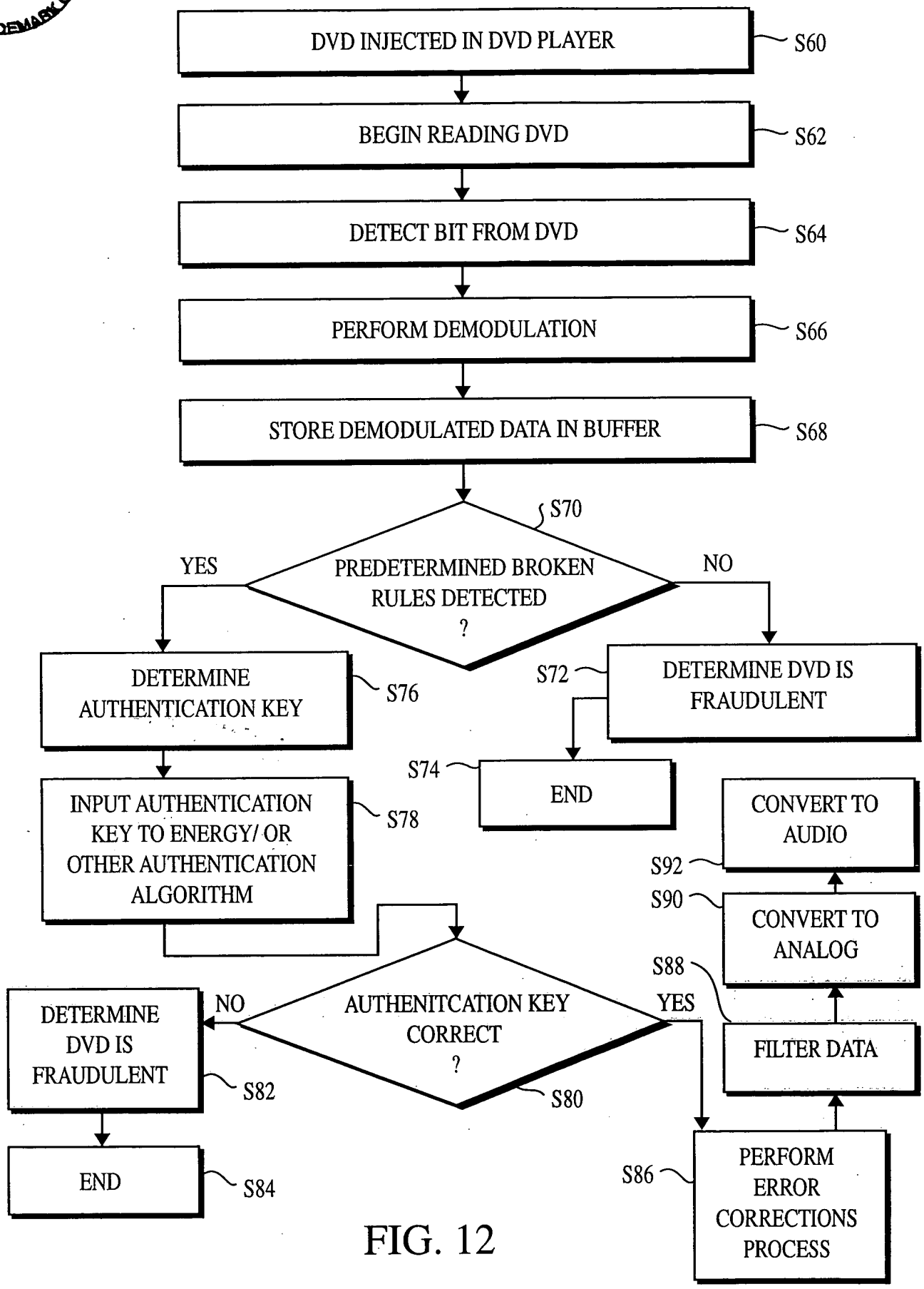


FIG. 12

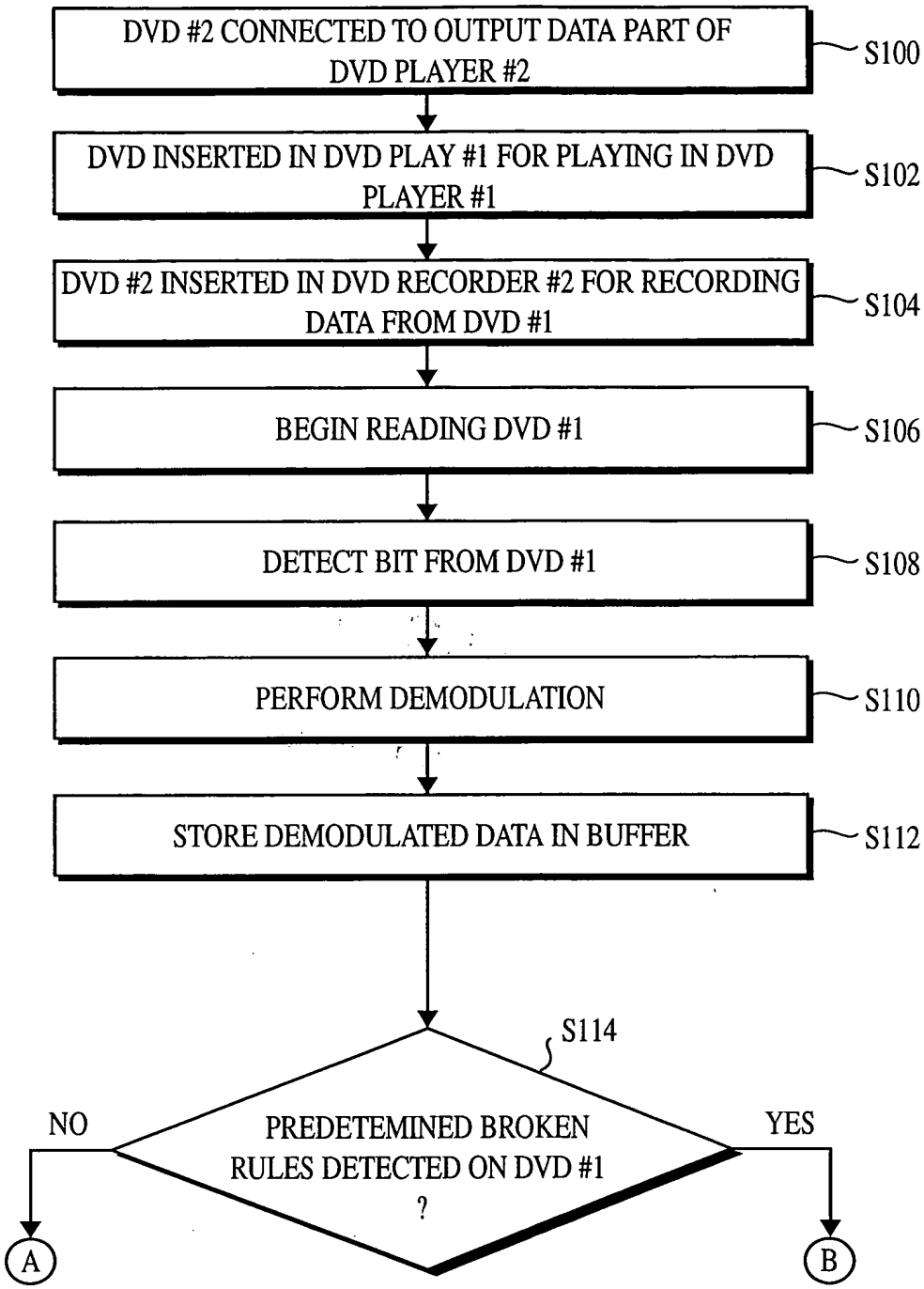


FIG. 13

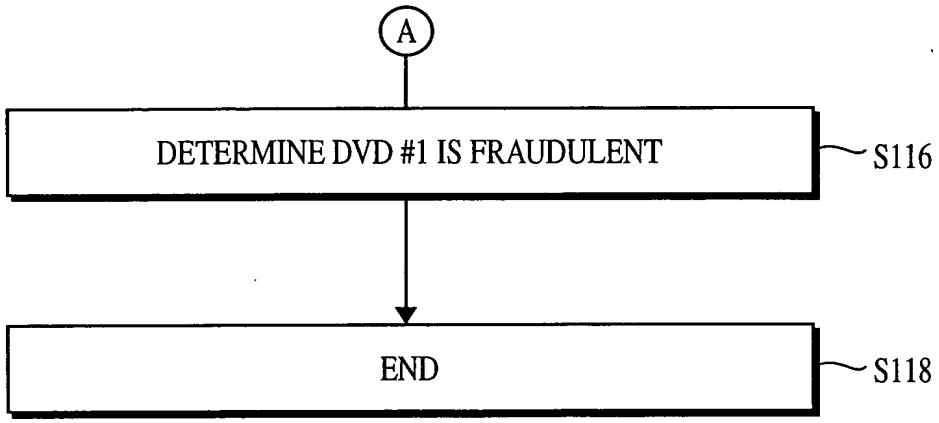


FIG. 14

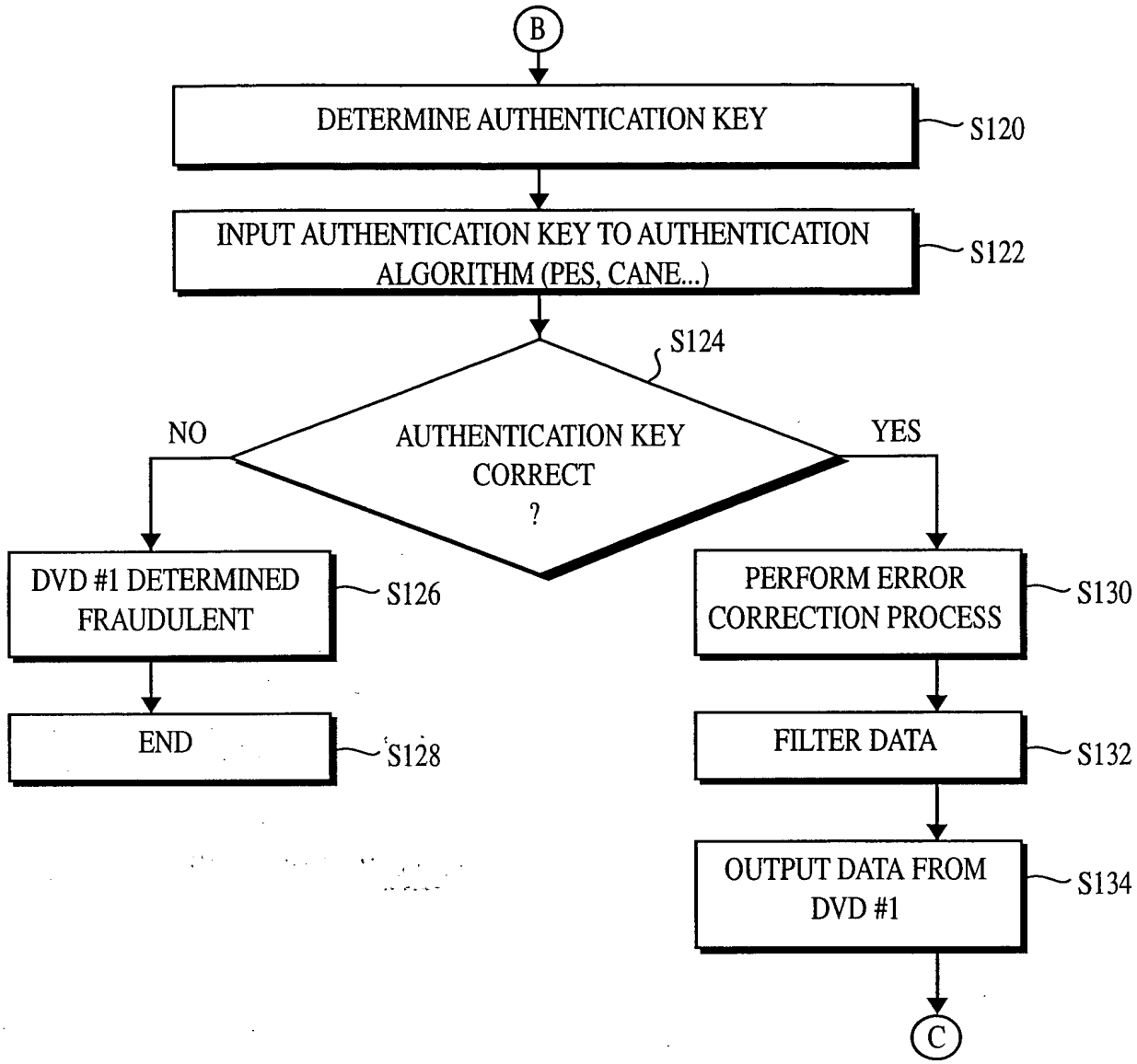


FIG. 15

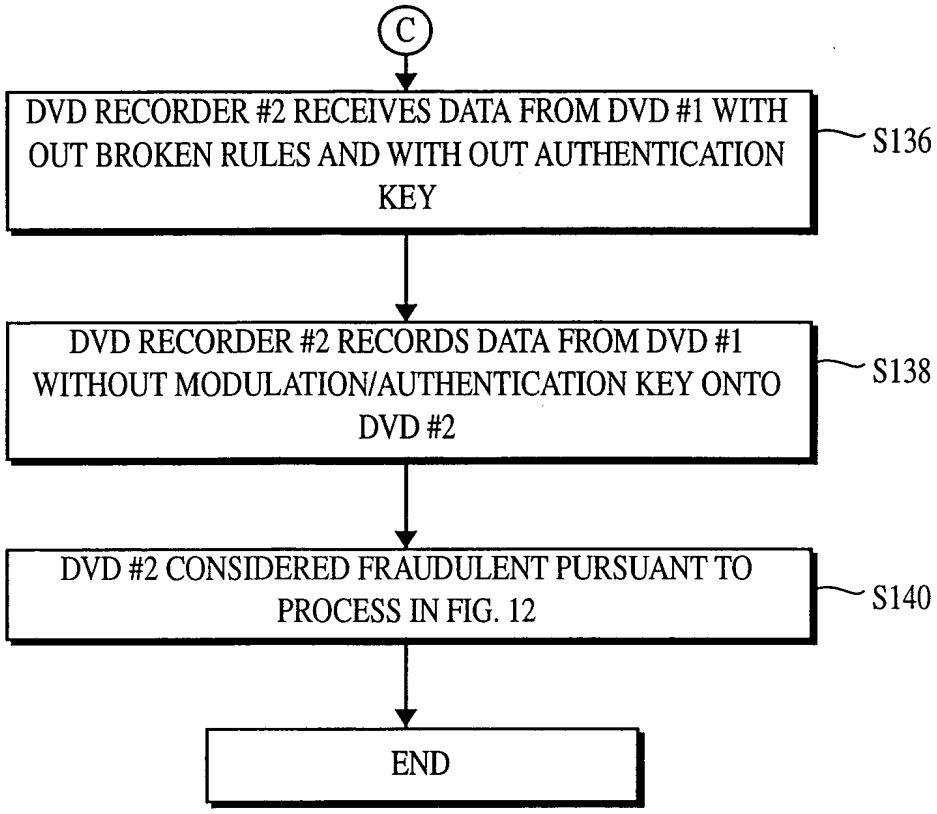


FIG. 16

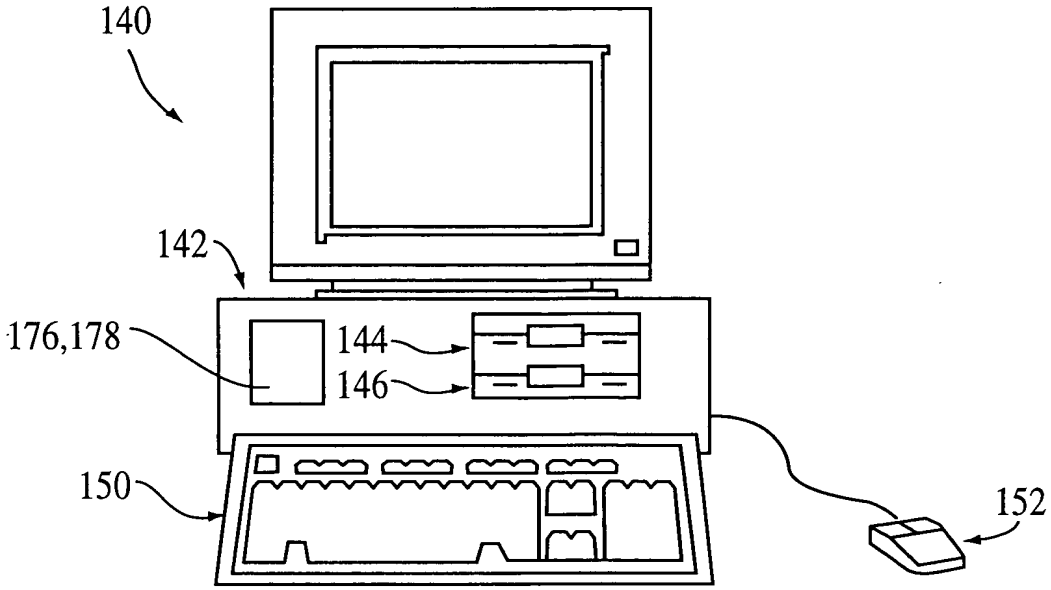


FIG. 17

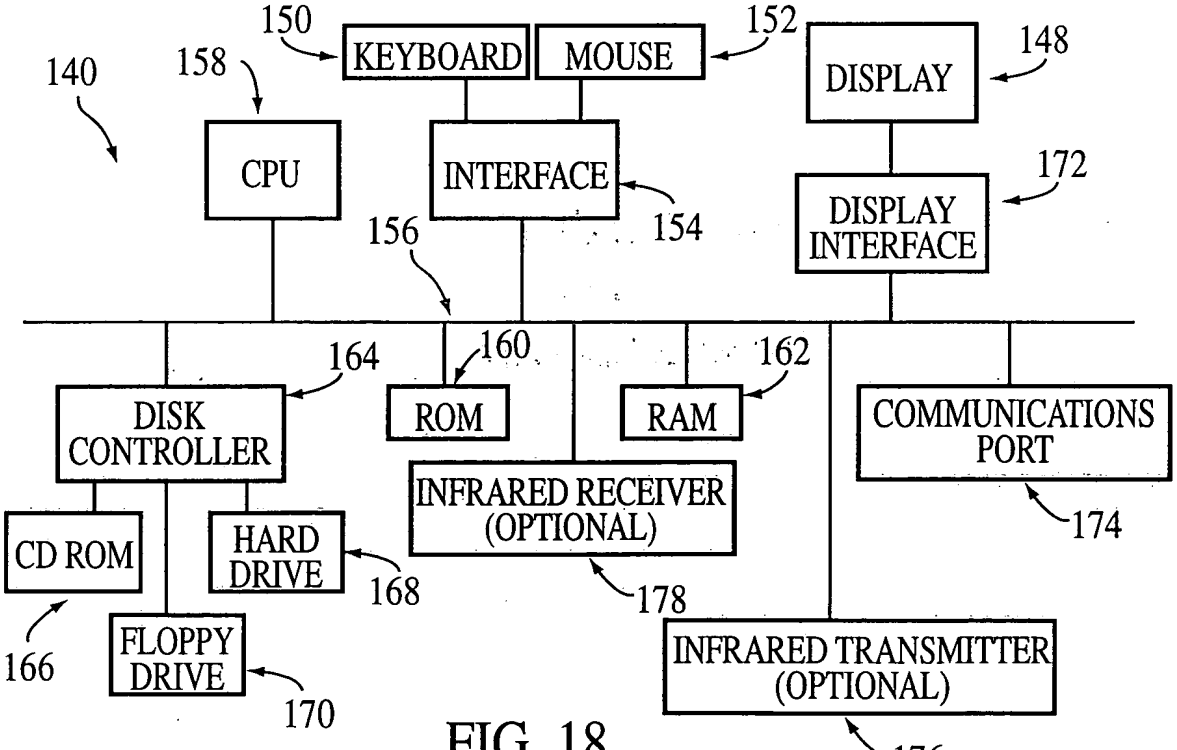


FIG. 18

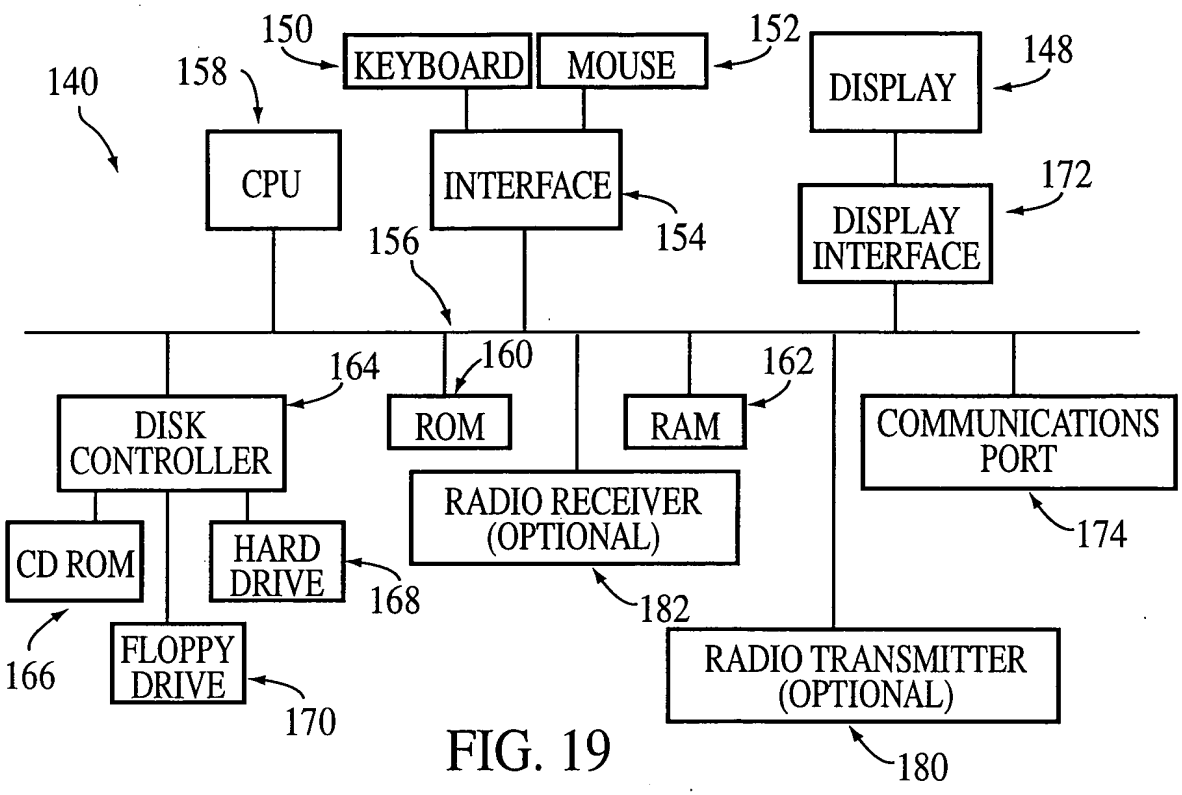


FIG. 19

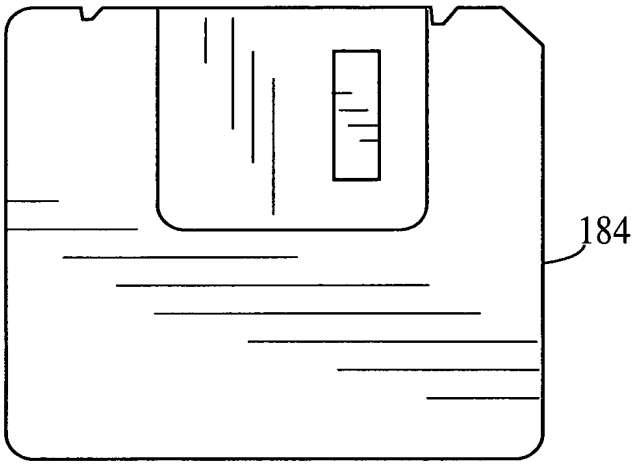


FIG. 20

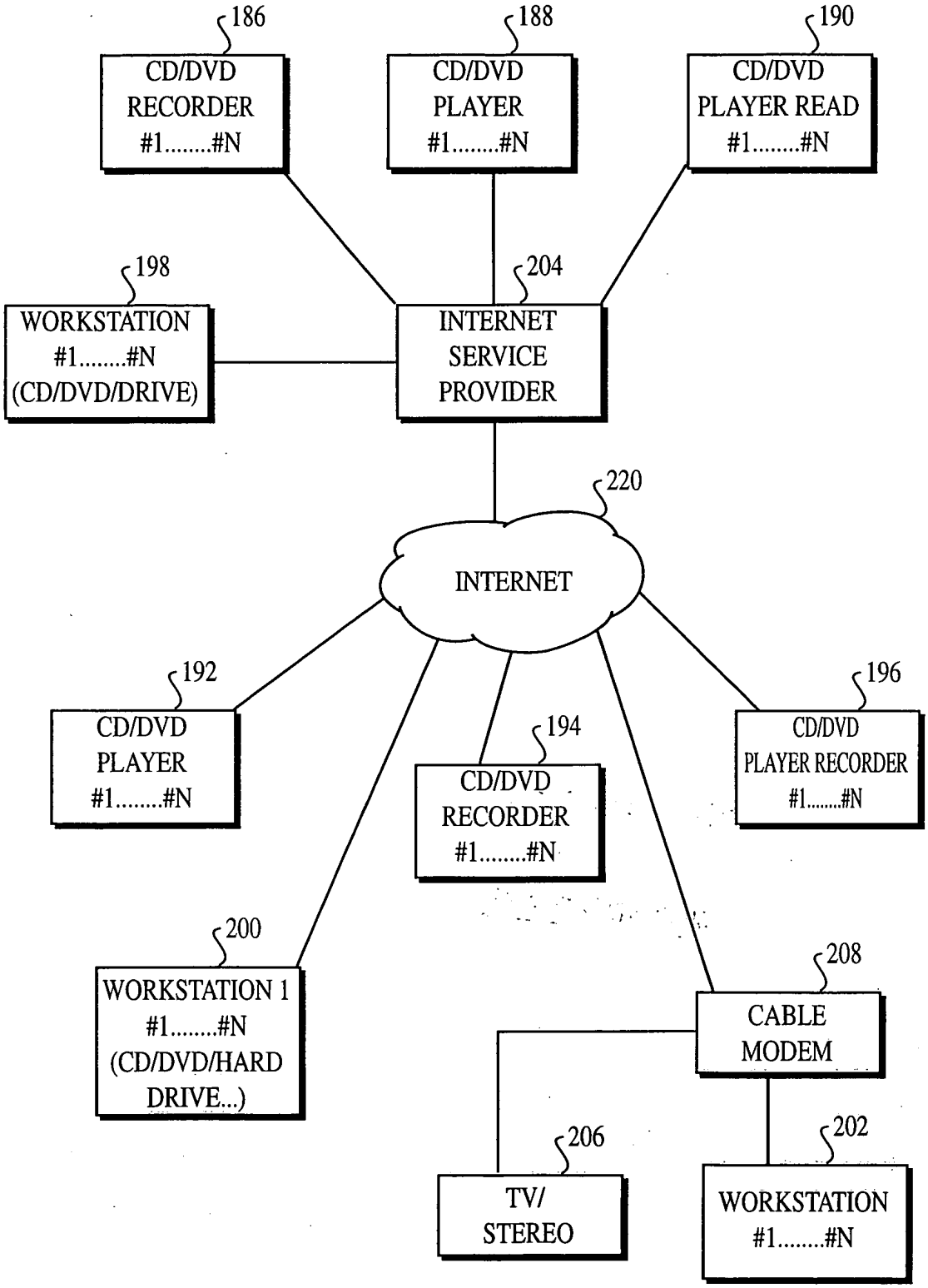


FIG. 21

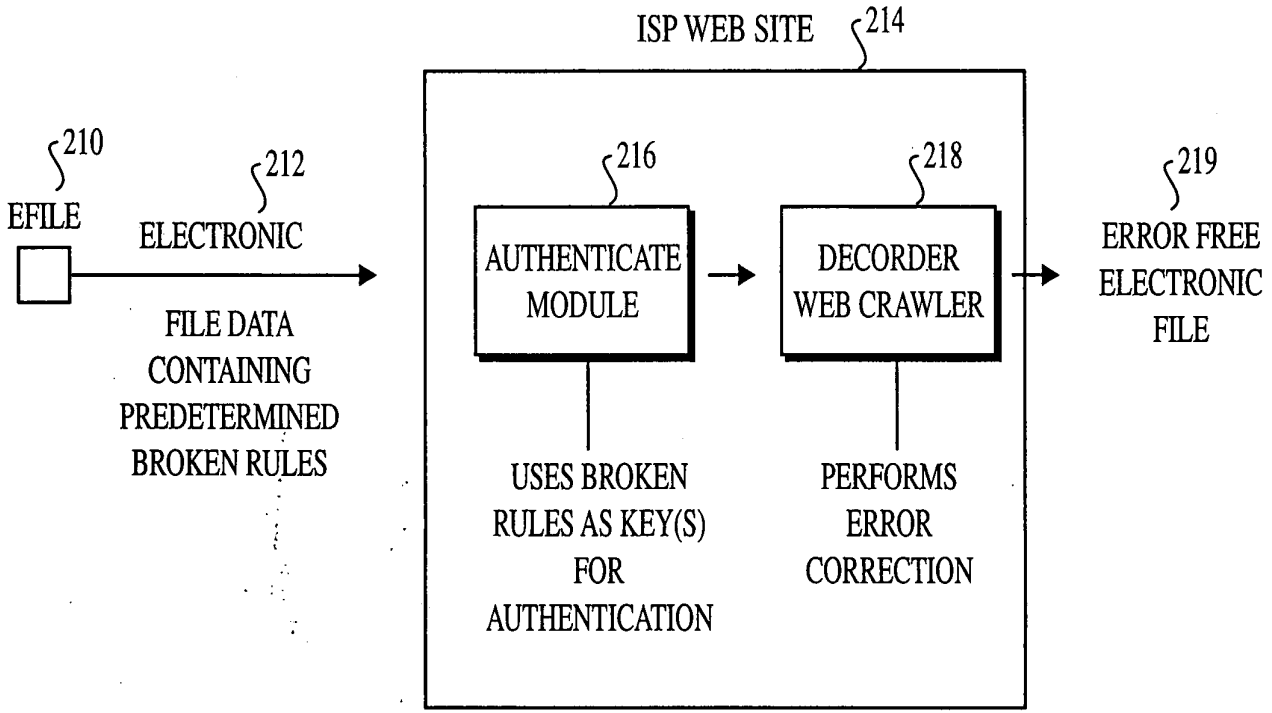


FIG. 22

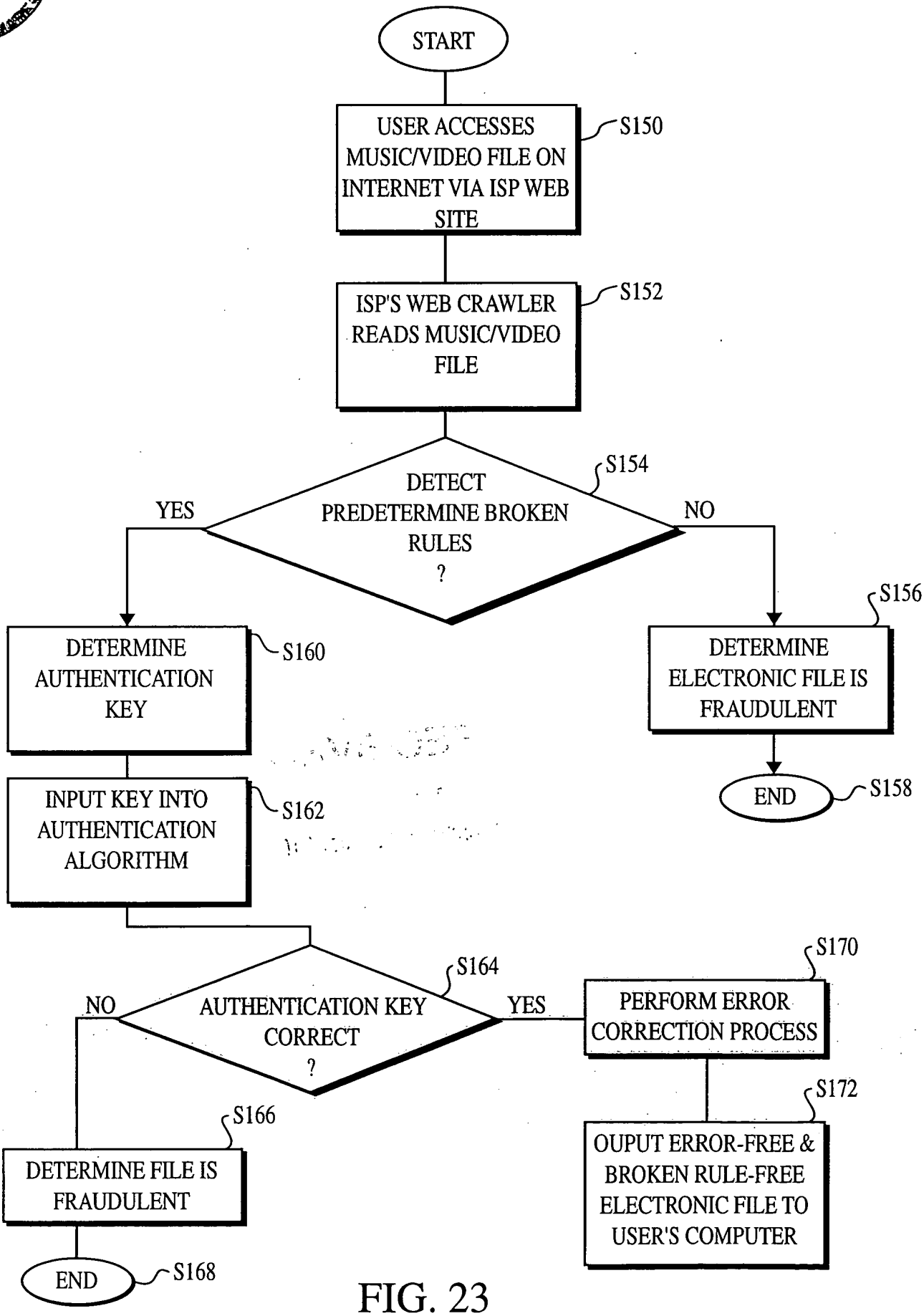


FIG. 23

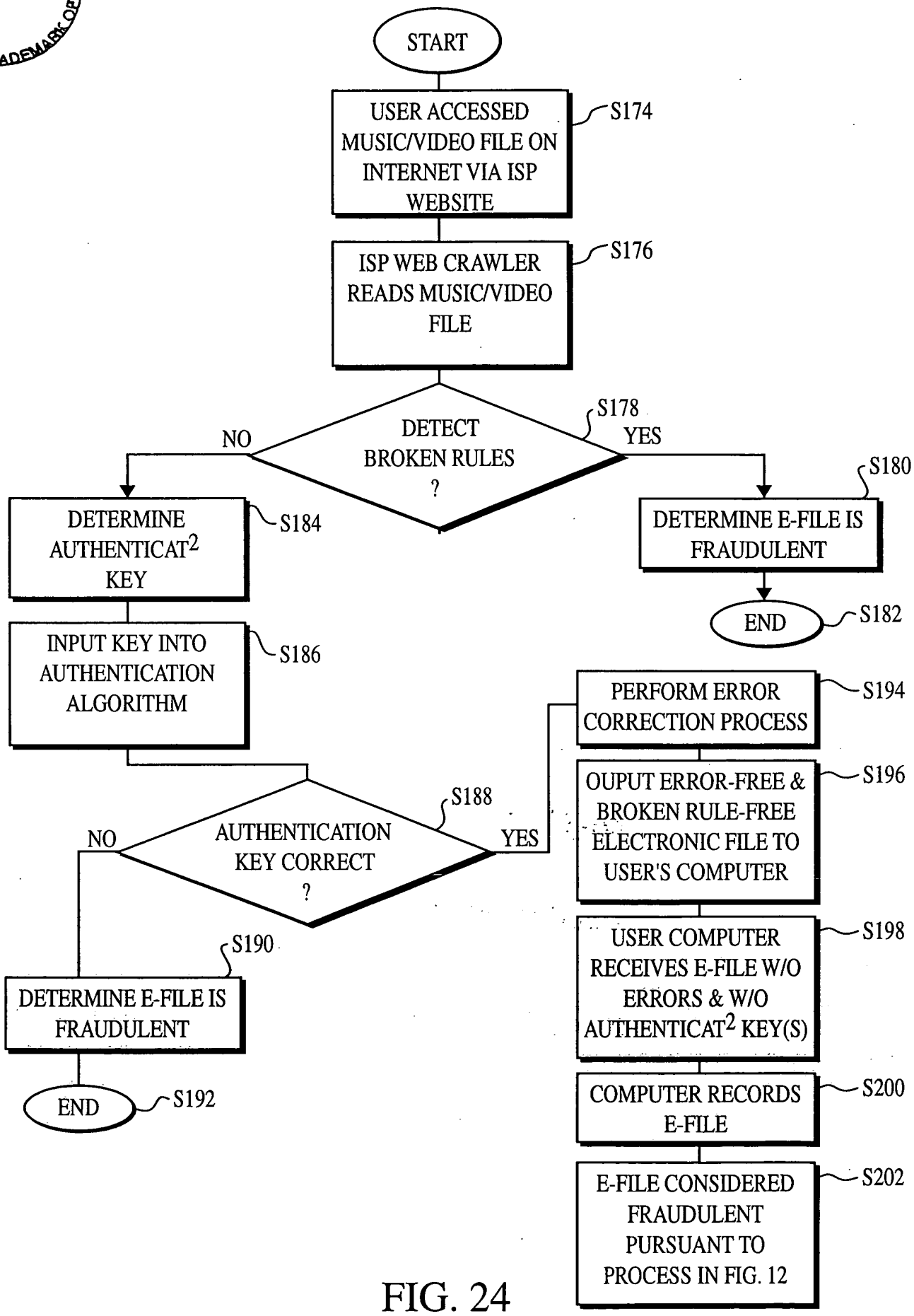


FIG. 24

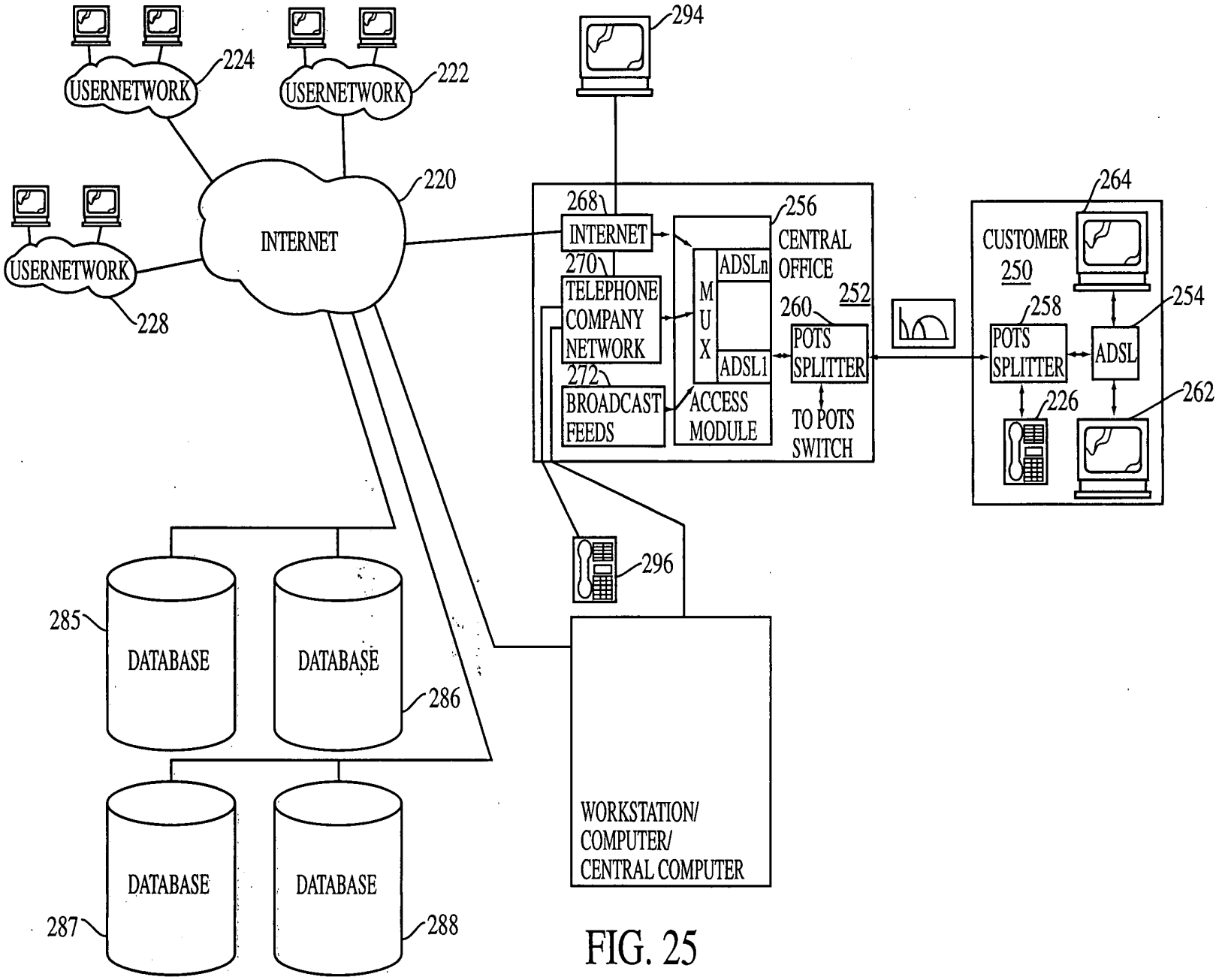
USERNETWORK
224
USERNETWORK
222
294
USERNETWORK
228
INTERNET
220
268
INTERNET
270
TELEPHONE COMPANY NETWORK
272
BROADCAST FEEDS
M U X
ADSLn
ADSL1
ACCESS MODULE
256
CENTRAL OFFICE
252
260
POTS SPLITTER
TO POTS SWITCH
264
CUSTOMER 250
258
POTS SPLITTER
254
ADSL
226
262
296
285
DATABASE
DATABASE
286
DATABASE
DATABASE
287
288
WORKSTATION/ COMPUTER/ CENTRAL COMPUTER

FIG. 25

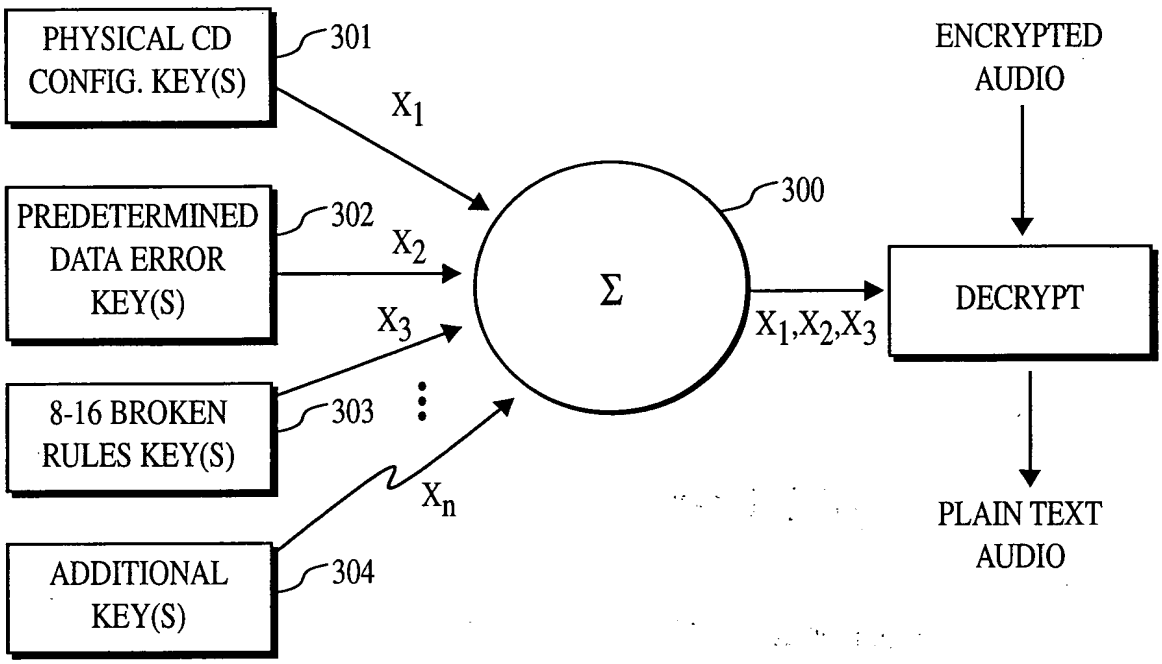


FIG. 26